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No Days 2, 5 or 6

## FOR INTERNAL ROUTING ONLY

CODE	NAME	CODE	NAME
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	Anders: "What did you take picture of, Frank," p 92		

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\* GPO : 1966 O-797-276

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UNCLASSIFIED WHEN DETACHED FROM CLASSIFIED MATERIAL

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02 21 05 54 CDR Okay.

02 21 05 55 LMP It is below us?

02 21 05 56 CMP Yes, and it's - -

02 21 05 57 LMP Oh, my God!

02 21 05 58 CDR What's wrong?

02 21 05 59 LMP Look at that.

02 21 06 00 CDR Well, come on - Let's - What's, what's the -

02 21 06 02 CMP 69:06.

02 21 06 04 CDR Stand by, we're all set.

02 21 06 08 CDR 213, 212.

02 21 06 12 LMP Okay. 69:06:20.

02 21 06 16 LMP Okay. DELTA-V THRUST A, NORMAL.

02 21 06 19 CDR NORMAL.

02 21 06 20 LMP TRANSLATIONAL HAND CONTROLLER, ARMED.

02 21 06 22 CDR ARMED.

02 21 06 23 LMP ROTATIONAL HAND CONTROLLER, both, ARMED.

02 21 06 24 CDR ARMED.

02 21 06 25 LMP TAPE RECORDER's going STOP - -

02 21 06 45 LMP Well, I see two - Look at that - Fantastic!

02 21 06 47 CMP Yes.

02 21 06 50 LMP See it? Fan - fantastic, but you know, I still have trouble telling the holes from the bumps.

02 21 06 55 CDR Alright, alright, come on. You're going to look at that for a long time.

02 21 07 07 LMP 20 hours, is that it?

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02 21 07 17 CDR Okay.

02 21 07 19 LMP Coming up 07:45; DSKY should blank.

02 21 07 22 CDR 1 minute. Come on, Jim, let's watch it real good.

02 21 07 30 CMP I'm proceeding on 99.

02 21 07 45 CDR DSKY blank.

02 21 07 46 LMP Okay. Okay, average g, ON; FLIGHT RECORDER's going to RECORD; EMS MODE, AUTO.

02 21 07 56 CMP AUTO.

02 21 07 57 LMP Check PIPA bias.

02 21 07 59 LMP No ullage required. Standing by for engine ON enable. Proceed when you get it.

02 21 08 07 CMP Okay.

02 21 08 08 LMP Start your watch when you get ignition.

02 21 08 12 LMP Stand by for - DELTA-V, NORMAL, B.

02 21 08 16 CMP ENABLED.

02 21 08 21 CDP 1 second, 2 seconds; alright, how's every - -

02 21 08 24 LMP We got them. Pressure's holding good.

02 21 08 28 CDR Alright. Everything's good over here, so far.

02 21 08 30 LMP Everything is looking good.

02 21 08 37 CDR 15 seconds.

02 21 08 40 LMP That's four ball valves; everything is great. 7

02 21 08 42 CDR Okay.

02 21 08 43 LMP Pressures are coming up nicely.

02 21 08 45 CDR Alright.

02 21 08 59 LMP Everything is great.

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02 21 09 03 CMP Be the longest 4 - -  
02 21 09 04 CDR Long burn.  
02 21 09 17 CMP She holding good?  
02 21 09 19 CDR Drifting a little bit in roll.  
02 21 09 26 LMP Good shape. P<sub>c</sub> check?  
02 21 09 30 CDR 100.  
02 21 09 36 LMP EMS is counting down.  
02 21 10 04 CDR Jesus, 4 minutes?  
02 21 10 20 CDR 2 minutes.  
02 21 10 28 CDR How's it doing, Bill?  
02 21 10 30 LMP Great shape. Pressures are holding. Helium's coming down nicely. All other systems are GO.  
02 21 10 48 CDR Okay.  
02 21 10 50 LMP We're past 2 minutes; we're in mode 30. Free area for flange TEMP. Everything is looking good.  
02 21 11 14 CMP Longest 4 minutes I ever spent.  
02 21 11 17 LMP You know, it seems like about 3g's.  
02 21 11 20 LMP 3 minutes.  
02 21 11 24 CMP Okay, you're running a little bit longer on the time on the computer. I got 58:65 - Stand by.  
02 21 11 39 LMP We're looking good, Frank.  
02 21 11 40 CMP 48 seconds.  
02 21 12 00 CMP 28.  
02 21 12 17 CMP Stand by.  
02 21 12 18 CDR Okay.  
02 21 12 20 CMP It went a little bit over, I think.

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02 21 12 24 LMP 5 - -  
02 21 12 25 CMP What would - -  
02 21 12 26 LMP 4, 3 - -  
02 21 12 27 CMP Move it over.  
02 21 12 28 LMP 2, 1 -  
02 21 12 29 CDR Shutdown.  
02 21 12 30 CMP Okay.  
02 21 12 31 CDR Okay, go ahead.  
02 21 12 32 LMP Okay, DELTA-V THRUST, A and B, OFF.  
02 21 12 33 CDR OFF.  
02 21 12 34 LMP Verify thrust is OFF; it is OFF; helium valves are  
okay; pressure is static; FLIGHT RECORDER - okay,  
SPS, GIMBAL MOTORS, four, OFF, slowly.  
02 21 12 46 CMP Okay.  
02 21 12 47 CDR 1, OFF.  
02 21 12 48 LMP Got it.  
02 21 12 49 CDR 2, OFF.  
02 21 12 50 LMP Got it.  
02 21 12 51 CDR 3, OFF.  
02 21 12 52 LMP Got it.  
02 21 12 53 CDR 4, OFF.  
02 21 12 54 LMP Got it. TVC SERVO POWER, 1 and 2, OFF.  
02 21 12 56 CDR 1, OFF; 2, OFF.  
02 21 12 57 LMP FLIGHT RECORDER's OFF; MAIN BUS tie's going OFF;  
A is OFF; B is OFF.  
02 21 13 13 LMP Okay, go with it; proceed.

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02 21 13 15 CMP Okay, null resid - proceed.  
02 21 13 16 CDR Proceed.  
02 21 13 17 LMP Null residuals.  
02 21 13 19 CDR Hold it a second or we're not going to null any.  
02 21 13 23 LMP Okay, RECORD.  
02 21 13 25 CMP Okay.  
02 21 13 27 LMP Okay, get the DELTA- $V_c$ .  
02 21 13 32 CMP Okay, DELTA- $V_c$ .  
02 21 13 34 CDR Minus 20.1.  
02 21 13 35 LMP Okay. EMS function, OFF.  
02 21 13 38 CDR EMS function, OFF.  
02 21 13 40 LMP EMS MODE, STANDBY.  
02 21 13 41 CDR STANDBY.  
02 21 13 43 LMP EMAG MODE, three, RATE 2.  
02 21 13 45 CMP Attitude?  
02 21 13 46 CDR RATE 2.  
02 21 13 47 LMP DEADBAND, MAX.  
02 21 13 48 CDR DEADBAND, MAX.  
02 21 13 52 CDR Okay.  
02 21 13 53 CMP  $V_{gx}$  -  
02 21 13 55 LMP TRANS CONTROLLER POWER, OFF.  
02 21 13 56 CDR OFF.  
02 21 13 57 LMP ROTATIONAL CONTROL POWER DIRECT, OFF.  
02 21 14 00 CDR OFF.

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02 21 14 01 LMP SPS PITCH 1 and 2, YAW 1 and 2 circuit breakers, OPEN.  
02 21 14 05 CDR YAW 1 and 2, PITCH 1 and 2, OPEN.  
02 21 14 09 LMP Pro - whenever you're ready, proceed.  
02 21 14 11 CMP Proceed.  
02 21 14 12 LMP Okay, VERB 82, ENTER.  
02 21 14 14 CMP VERB 82, ENTER. Check it at zero; I'd better go to zero, now.  
02 21 14 22 CDR You want to put that in the other state vector, too, don't you?  
02 21 14 25 CMP Yes.  
02 21 14 26 CDR Got it.  
02 21 14 31 LMP Congratulations, gentlemen, you're at 00.  
02 21 14 33 CDR Well, now is no time for congratulations yet.  
02 21 14 35 CMP No, we get stuck with that on the carrier. Okay, VERB 82, ENTER.  
02 21 14 40 CDR Right.  
02 21 14 43 CMP Our state vector.  
02 21 14 49 LMP Okay, you got it?  
02 21 14 50 CMP We're at 1691, minus 6005. Roger.  
02 21 14 55 LMP Proceed.  
02 21 14 58 CMP Proceed.  
02 21 14 59 LMP 00, EN - -  
02 21 15 00 CDR Go back to P00.  
02 21 15 02 LMP 00, ENTER.  
02 21 15 03 CDR Wait - wait a minute. Okay.  
02 21 15 04 LMP We go to 37 and then P00, though.

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02 21 15 11 LMP VERB 66, ENTER.

02 21 15 13 CMP VERB 66, ENTER.

02 21 15 15 CDR That's it. Dig out the flight plan.

02 21 15 17 LMP Whew! Well, we answered it. They're meteorites, aren't they (laughter)?

02 21 15 22 CMP Hey, I don't see a thing. Where are we?

02 21 15 24 LMP It looks like a big - looks like a big beach down there.

02 21 15 28 CDR Let me have the flight plan.

02 21 15 29 CMP Holy cow, it's completely blank here.

02 21 15 31 CDR Okay, Jim, you want to -

02 21 15 35 CMP Have we got all the gimbal motors off and all that sort of thing?

02 21 15 37 LMP Yes, sir.

02 21 15 45 CDR You want to take some pictures, Bill?

02 21 15 47 LMP Let's just go by the - whatever the flight plan says there.

02 21 15 50 CDR Alright.

02 21 15 53 CDR Let's see what it says to do. SPS monitor, you're all through with that? Camera PREP.

02 21 15 59 LMP Okay, Jim has got to get them out or I'll have to - one of us - both of us probably had best get them out.

02 21 16 02 CMP Yes, I'll just take a look here a minute.

02 21 16 11 CMP Which ones are the craters?

02 21 16 15 LMP Don't we - we have a lot of time for looking; let's get those cameras out. Here, do you want to stick those in, Jim? Please, when you go by?

02 21 16 31 LMP GDC aligned and key align to IMU/ORB RATE.

02 21 16 37 CDR Okay. ORB RATE, lunar power.

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02 21 16 40 LMP Can I call a VERB 83 here, Jim?

02 21 16 45 CMP Oh, you're within -

02 21 16 47 LMP Huh?

02 21 16 48 CMP Yes, you can do that. You're below 482 miles or whatever it is.

02 21 17 00 CDR 197.

02 21 17 02 CMP Huh? What are you doing?

02 21 17 04 LMP What do you need? Who're you talking to, me?

02 21 17 06 CMP Yes, I thought you said something about VERB 97?

02 21 17 09 LMP Oh.

02 21 17 11 CMP You get the camera equipment, and I'll get this stuff out.

02 21 17 18 LMP Okay, what's our configuration, Frank?

02 21 17 21 CDR Okay, stand by a minute while I get - -

02 21 17 23 LMP Call them out real loud, because I'm going off the air.

02 21 17 35 CDR Alright, I'm supposed to - Let's see, 16; 18; new C; exposure, 1/250th; 1 foot per second; one MAG.

02 21 17 44 LMP ...

02 21 17 53 CDR Yes, new C.

02 21 17 55 LMP Check.

02 21 17 56 CDR Right.

02 21 18 08 CMP Hey, you know something; it's gray, huh?

02 21 18 10 CDR Yes.

02 21 18 20 CDR Okay, I've got to roll right, so watch out.

02 21 18 25 CMP Go easy on those thrusters.

02 21 18 34 CMP (Singing)

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02 21 18 35 CDR Have you got that thing running, Bill?

02 21 18 37 LMP What's that, Frank?

02 21 18 38 CDR The camera?

02 21 18 43 LMP ...

02 21 18 48 CMP Yes. Just a minute.

02 21 19 10 LMP ..., Frank. You got the cameras ...

02 21 19 15 CDR 2; 150th; new; B&W; MAG D.

02 21 19 18 LMP ...

02 21 19 19 CDR 1 - 1; 80; B&W; 1/250th.

02 21 19 27 CMP Okay.

02 21 19 32 LMP Okay, let's get a lens.

02 21 19 35 CMP 2, 150?

02 21 19 38 CMP 50 millime - -

02 21 19 39 CDR 2; 150; new; black and white; MAG D.

02 21 19 43 LMP I've got MAG D.

02 21 19 45 CMP Okay. Okay, MAG D. What kind of a camera?  
70 millimeter?

02 21 19 54 LMP ... number 2 with this lens.

02 21 20 00 CMP Okay. What else? Filters?

02 21 20 06 CDR Doesn't say anything about filters. Oh, yes, red  
and black filter, U-4.

02 21 20 11 CMP You got that? Okay.

02 21 20 16 CDR Something went flying down when we started burning,  
didn't it?

02 21 20 27 LMP ...

02 21 20 28 CDR Huh?

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68.5 x 60.0  
in 80000 8  
w/ 10000

02 21 20 30 LMP ...  
02 21 20 33 CDR No.  
02 21 20 36 CMP Did I write on there that - the orbit we are in?  
02 21 20 40 CDR It was just what they told me, yes - 169.1 by 60.5.  
02 21 20 43 CMP Okay. Okay, when I give the burn status report there, will you -  
02 21 21 17 CMP Say, look at - Can you put those cameras someplace? Stash them against the back of your bulkhead. Stash this back there, too.  
02 21 21 32 CMP Hey, you're maneuvering quite rapidly.  
02 21 21 35 CDR No, I'm not.  
02 21 22 04 CMP Well.  
02 21 22 33 CMP Tape, Bill. Thank you.  
02 21 22 41 LMP ...  
02 21 23 59 CDR Are these cameras all set up right?  
02 21 24 01 CDR Huh?  
02 21 24 03 LMP ...  
02 21 24 08 CDR Huh?  
02 21 24 09 LMP ...  
02 21 24 13 CDR Can I take one?  
02 21 24 15 LMP ...  
02 21 24 30 CDR That's what I thought: it doesn't work.  
02 21 24 38 CDR Well, that - the camera doesn't work.  
02 21 24 40 LMP You want me to try it out?  
02 21 24 42 CDR Yes.  
02 21 24 46 LMP ...

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02 21 25 06 CDR Huh? Does it work now?  
02 21 25 09 LMP ...  
02 21 25 10 CDR We're not that hard up; don't worry about it.  
02 21 25 15 CMP Listen, we're not going to --  
02 21 25 18 CDR I just want to take a picture.  
02 21 25 21 CDR Hey, look; just slow down and take your time. Okay.  
02 21 25 28 LMP f:8.  
02 21 25 30 CDR f:8 at what?  
02 21 25 35 LMP ...  
02 21 25 38 CDR Okay.  
02 21 25 44 CDR Okay. Bill, get me MSFN, will you?  
02 21 25 56 LMP AOS at 69:31.  
02 21 25 59 CDR Oh, is it that late? Okay, I thought it was -  
02 21 26 13 CMP Can you see it? Huh?  
02 21 26 15 LMP Yes, ...  
02 21 26 23 CDR It says I'm supposed to run one MAG here - of  
16 millimeter; new color exposure, 1/250th, spot,  
1 foot per second.  
02 21 26 35 LMP ... flight plan ...  
02 21 26 42 CMP Wait a second, Bill.  
02 21 26 47 CDR Take your time; go slow.  
02 21 26 55 LMP Did you take your bracket up?  
02 21 26 58 CMP No.  
02 21 26 59 LMP ...  
02 21 27 00 CDR I'll get it.

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02 21 27 02 LMP ...

02 21 27 03 CDR Where is it?

02 21 27 04 LMP ...

02 21 27 06 CMP Boy, there're no shadows in those craters down there. Are we near the subsolar point?

02 21 27 11 CDR Yes.

02 21 27 12 CMP The subsolar point?

02 21 27 13 CDR Yes, getting close to it.

02 21 27 16 CMP What's our attitude?

02 21 27 18 CDR Well, we're pitch down. We're going around it.

02 21 27 22 CMP Are we heads up?

02 21 27 23 CDR Yes.

02 21 27 26 CDR Jim, have you unstowed the orbital charts?

02 21 27 28 CMP Yes, I'm in the process right now. I've got part of them unstowed.

02 21 27 44 LMP ..., Frank.

02 21 27 48 CDR Okay.

02 21 27 56 LMP ...

02 21 28 19 CMP Why don't we - Say, why don't we temporarily stow it someplace? You're never going to use this thing at all? I think you're making a big mistake using that 250 millimeter.

02 21 28 28 LMP No, not on ... because that's ...

02 21 28 31 CMP Oh.

02 21 28 56 CMP Well -

02 21 29 16 CMP Where do we start doing the fan work, Frank?

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02 21 29 20 CDR Well, first of all, we've got to get these cameras set up.

02 21 29 28 CDR Bill, that's not in the flight plan.

02 21 29 42 CDR You want me to take some pictures with that 16 millimeter?

02 21 29 49 LMP Frank, ...

02 21 29 52 CDR New color exposure, 1/250th, spot, 1 foot per second; one whole magazine they want.

02 21 29 57 LMP ...

02 21 30 14 CDR I need the camera.

02 21 30 26 CDR What are you doing, Jim?

02 21 30 27 CMP Trying to figure out where we are, Frank.

02 21 30 44 CMP Alright, it's 11 south, 118 west.

02 21 30 48 CDR Is that all set?

02 21 31 07 CMP Okay, we should be -

02 21 31 15 CMP We're passing over Brand right now.

02 21 31 28 LMP Brand?

02 21 31 29 CMP Brand right about now.

02 21 31 36 CMP Holy cow, there's no resolution whatso - there's no shadows on the craters.

02 21 31 46 CMP Hey, there we go. There we are.

02 21 31 49 LMP ...

02 21 31 53 CMP Is that Tsiolkovsky?

02 21 31 54 LMP ...

02 21 31 55 CMP Okay, we'll go upside down.

02 21 31 56 CDR Well, listen, Bill, if this is the way it goes, the way you say, look at that.

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02 21 31 59 LMP You have it all the way in, Frank?

02 21 32 02 CDR Yes. There's a step on that thing; it won't go any higher than that.

02 21 32 08 CMP Gee, you ought to get a picture of Tsiolkovsky.

02 21 32 10 LMP ...

02 21 32 15 CMP Hey, how am I going to get any ... with this window the way it is?

02 21 32 20 CMP Frank?

02 21 32 25 CDR I don't know, Jim.

02 21 32 26 CMP I'm going to have to use another window.

02 21 32 28 CDR Okay.

02 21 32 36 LMP ...

02 21 32 38 CMP Okay, here we go.

02 21 32 43 CMP Houston, Apollo 8.

02 21 33 03 CDR What do you want this on, Bill?

02 21 33 05 CMP Oh, where's the other flight plan?

02 21 33 08 LMP Okay, be about - Going to f:8, Frank.

02 21 33 14 CDR f:8?

02 21 33 15 LMP And we just passed the subsolar point.

02 21 33 22 CMP Houston, Apollo 8.

02 21 33 29 CDR Houston, this is Apollo 8. Over.

02 21 33 38 CMP You through with the flight plan?

02 21 33 41 CDR No.

02 21 33 42 CMP Can I have that other flight plan when you get a chance?

02 21 33 45 CDR Are you hooked on to them, Bill?

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02 21 33 46 CC Apollo 8, Houston. Over.

02 21 33 47 CDR Houston, Houston, this is Apollo 8. Over.

02 21 33 50 LMP He's answering you.

02 21 33 51 CMP Go ahead, Houston. This is Apollo 8. Burn complete.  
Our orbit is 160.9 by 60.5 - 169.1 by 60.5.

02 21 34 14 CDR Are we on the high gain, Jim? Bill?

02 21 34 18 LMP Give me a VERB 64, Frank.

02 21 34 20 CDR What are you doing here? Let's get rid of that.

02 21 34 26 CMP Houston, Apollo 8.

02 21 34 28 CDR VERB 64.

02 21 34 30 CDR I don't think we - -

02 21 34 32 CMP Roger. You are coming in very weak. Our orbit is  
169 by 60.5.

02 21 34 38 CDR Give them the whole report there, Jim.

02 21 34 42 CMP I think I'm talking to myself.

02 21 34 44 CDR Why don't you get a Roger for the dump we sent them?

02 21 34 49 LMP Okay, that's - Let me go into high gain.

02 21 35 31 CDR Can you get them, Bill?

02 21 35 32 LMP We got them.

02 21 35 35 CDR Houston, Apollo 8. How do you read? How do you  
read Apollo 8, Houston?

02 21 35 37 LMP They've got a ground problem.

02 21 35 43 CMP You taking that at one frame per second?

02 21 35 46 LMP Yes, that's what it says to.

02 21 35 49 CDR Houston, Apollo 8.

02 21 35 54 CDR I hear - They're reading us now.

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02 21 35 57 CMP There we go. Houston, Apollo 8. Over.

02 21 36 08 CDR Are we hooked on with the high gain?

02 21 36 10 CMP Yes, sir.

02 21 36 14 CMP They came through at one time, didn't they?

02 21 36 16 CDR Yes.

02 21 36 25 CC Apollo 8, Apollo 8, this is Houston, Houston. Over.

02 21 36 30 CMP Okay.

02 21 36 31 CDR Roger, Houston. We read you loud and clear. How do you read us?

02 21 36 36 CC Apollo 8, this is Houston. Reading you loud and clear now. And verify your EVAPORATOR WATER CONTROL panel switch to the AUTO position. Over.

02 21 36 48 CMP Is it?

02 21 36 49 CDR It is in AUTO.

02 21 36 50 CMP Roger - -

02 21 36 51 CDR Roger. It is in AUTO.

02 21 36 53 CDR Go ahead, Jim, with it.

02 21 36 55 CC Roger.

02 21 36 58 CDR Well, look here - this DSKY is way up.

02 21 36 59 CMP Burn status report as follows: Burn on time, burn time 4 minutes 6-1/2 seconds;  $V_{gx}$  minus 1.4; attitude nominal; no trim;  $V_{gy}$  was zero;  $V_{gz}$  was plus 0.2; DELTA- $V_c$  was minus 20.2; orbit 169.1 by 60.5.

02 21 37 47 CC Apollo 8, Houston. Roger. The burn on time, burn time was 4:06.5,  $V_{gx}$  is minus 1.4.

02 21 38 05 CDR Bill, how come this is so high here now?

02 21 38 08 CMP ...

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02 21 38 10 CDR Huh?

02 21 38 12 LMP I'm checking the fan out.

02 21 38 13 CDR Is it alright?

02 21 38 14 LMP I'll let you know.

02 21 38 20 CC Apollo 8, Houston. Verify your EVAP WATER CONTROL on panel 382 in AUTO; your EVAP OUT temperature is high. Over.

02 21 38 31 CDR Roger; standing by.

02 21 38 38 CDR Houston, Apollo 8. Roger; PRIMARY EVAP is AUTO; H<sub>2</sub> flow, AUTO. Do you recommend activating the secondary water boiler?

02 21 38 53 CC Roger; copy, stand by.

02 21 38 57 CDR Now, Jim, let's get this problem squared away here, or we won't be going anywhere.

02 21 39 03 CDR We're not boiling, Ji - Bill?

02 21 39 04 LMP No.

02 21 39 11 CC Apollo 8, this is Houston. Reverify manual valve on panel 382, EVAPORATOR WATER CONTROL, AUTOMATIC. Over.

02 21 39 20 CDR Roger; verified.

02 21 39 25 CMP Any help down here?

02 21 39 26 LMP Well, you might reverify it again. It's the one next to the secondary one that you had turned on.

02 21 39 32 CMP Okay.

02 21 39 38 CC Apollo 8, this is Houston. Recommend you activate your secondary water evaporator.

02 21 39 52 CDR Secondary EVAP coming on the line.

02 21 39 56 CC Roger.

02 21 40 01 CMP Secondary evaporator is in AUTO.

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02 21 40 03 LMP Primary is the main one.

02 21 40 05 CMP In AUTO.

02 21 40 07 CDR It dried up.

02 21 40 09 CMP Can you get water to it?

02 21 40 21 CDR How's the secondary one - primary one doing - secondary one doing, Bill?

02 21 40 25 LMP Secondary one is doing great.

02 21 40 27 CDR It's operating?

02 21 40 41 CC Apollo 8, Houston. Turn off your DSE, and we'll go to HIGH bit rate. Over.

02 21 40 48 CDR Roger.

02 22 02 58 LMP We completed target 72 strip and target 90 strip and the terminator photography to the south.

02 22 03 13 CMP Okay, we're going to get updates. And a P52.

02 22 03 27 CDR Roger.

02 22 03 29 LMP Can I have the other lunar flight plan there, Jim?

02 22 03 32 CDR Houston, for your information, - -

02 22 03 33 CMP Yes.

02 22 03 34 CDR - - we lost radio contact at the exact second we predicted.

02 22 03 45 CDR Are you sure you didn't turn off the transmitters at that time?

02 22 03 58 CDR While these other guys all are looking at the moon, I want to make sure we got a good SPS, so how about giving me that report when you can?

02 22 04 12 CDR And we want a GO for every REV, please. Or otherwise, we're going to - TEI along with every REV.

02 22 04 36 CDR Are we on high gain, Bill?

02 22 04 38 LMP Yes.

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02 22 04 42 CDR Well, this is ... see if I can ...

02 22 04 44 LMP Yes.

02 22 05 04 CMP Here's the - I'll bet you that's what we're supposed to do.

02 22 05 09 CDR I wouldn't know.

02 22 05 11 CMP ...

02 22 05 15 CDR Have you got the DELTA counter over there, please?

02 22 05 58 LMP Those two strips and the terminator photography on camera 1 were taken on magazine E which is now reading - 29 exposures.

02 22 06 17 CDR How are you doing, Bill?

02 22 06 18 LMP Getting it done.

02 22 06 21 CMP ...

02 22 06 31 CMP I don't think so. Okay, I'm going out ...

02 22 06 36 LMP What did you take a picture of, Frank? Do you remember ...?

02 22 06 43 LMP And Frank took a - took a picture on camera 2, magazine A, which is now reading 40.

02 22 07 04 LMP Now we're going to change - take off magazine A.

02 22 07 10 CDR Jim, didn't I hand you a magazine over there?

02 22 07 14 CMP Yes, I ...

02 22 07 18 LMP Okay, what I meant for you to do ...

02 22 07 27 CDR Negative.

02 22 07 35 CMP Okay, we have ...

02 22 07 43 CDR Negative, we'll have breakfast in a little while here.

02 22 08 18 LMP We're in the dark now?

02 22 08 23 CMP Well, it looks - sure looks that way.

02 22 08 33 CMP 13. Capella.

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02 22 08 48 CDR What was it, Bill?

02 22 08 50 LMP Capella.

02 22 08 53 CMP Okay.

02 22 09 01 CDR Have you charged these batteries, Bill?

02 22 09 03 LMP Never did ...

02 22 09 06 CMP Okay, I'll ... lights out ... I could just mark them without even - -

02 22 09 11 LMP Earth - earthshine is about as expected, Houston. It's not as much detail, of course, as in the sunlight, but you can see the - the large craters quite distinctly, and you can see the albedo contacts quite distinctly. And also, the - There's a good three-dimensional view of the rims of the larger craters.

02 22 09 42 CMP ... Wait a minute.

02 22 09 52 LMP I think our high-speed film will be able to pick some of this stuff up quite well.

02 22 10 03 CDR Oh, right over ...

02 22 10 24 LMP Have you got your camera ...?

02 22 10 33 CDR All balls.

02 22 10 43 CMP Okay. Minus 3077, plus 3017, plus 3065.

02 22 11 07 CDR Okay, the next thing we put up is my ...

02 22 11 13 LMP Okay, Jim, go ahead and eat.

02 22 11 16 CMP Okay, let me see whether I have this ...

02 22 11 21 LMP ... are okay, Frank?

02 22 11 28 LMP EPS is alright?

02 22 11 38 LMP ... should expect my ... later.

02 22 11 49 LMP This thing must be ... Oh no, don't tell me the thing dried out.

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02 22 11 55 IMP No, the boiler isn't acting up; it just dried out.

02 22 12 30 CDR Did you verify all the systems?

02 22 12 33 IMP Yes. We have sunset at -

02 22 12 35 CDR Not too long.

02 22 12 42 CDR Go ahead with your information on the filters, Houston.

02 22 12 49 CMP Boy, that - -

02 22 13 37 CDR Go ahead.

02 22 14 02 CDR Go ahead.

02 22 14 25 CDR We got you.

02 22 14 28 CMP ... wrong with the TV picture ...

02 22 14 40 IMP Now don't - Let's not even screw with the telephoto, okay, Frank?

02 22 14 45 CDR Right.

02 22 14 47 CMP Well, ought to use that wide angle. Then you could really - -

02 22 14 49 IMP Jim? Have you got time to get that red filter out of there or not?

02 22 14 53 CMP Out of where?

02 22 14 54 IMP Out of that other - I'll get it; I'll get it.

02 22 14 58 CMP Did you see that other map around here someplace?

02 22 15 00 CDR Yes, the - the flat one?

02 22 15 02 CMP No, I've got the flat one; the other - folded one.

02 22 15 26 CMP Well, I'm not worried about these ..., but I am about the other two.

02 22 15 33 CDR Houston, Apollo 8. Standing by to record TEI 1 and TEI 2.

02 22 15 54 CDR Roger; understand.

02 22 16 03 CMP Where is the flight plan?

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02 22 16 12 CDR You're getting that red filter?

02 22 16 15 CMP Yes, I got it.

02 22 16 26 CDR Roger; we could feel the chug when we threw in bank B. Not a chug, but we could feel the additional thrust.

02 22 16 36 CMP Here you go.

02 22 16 41 LMP Houston, be advised on this red-blue filter technique on the TV that you cannot slide the two filters out of the way with them taped onto the TV cameras, so I suggest you use red-blue, and then take them off.

02 22 17 14 CMP Did you use 83?

02 22 17 16 CDR Huh?

02 22 17 17 CMP Did you use VERB 83?

02 22 17 19 LMP Roger; you don't want the red filter; you want the blue by itself. Is that correct?

02 22 17 41 LMP Roger; in work.

02 22 17 45 LMP Tape, Jim, please.

02 22 17 46 CMP Tape?

02 22 18 02 CMP You got enough there?

02 22 18 11 LMP Now give me an ...

02 22 18 19 CMP Here - I go' ...

02 22 18 28 LMP Frank, what else have you got, ...?

02 22 18 41 CDR Go ahead, Houston; Apollo 8.

02 22 19 00 CDR We will not do that; we're going to stick with the flight plan, and make the best we can here.

02 22 19 10 CDR As usual, in the real world, the flight plan looks a lot fuller than it did in Florida.

02 22 19 26 CMP ...

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02 22 19 29 LMP Well, I know we may need it. I got some more for you. ... remember -

02 22 19 36 CMP Huh?

02 22 19 37 LMP Did you bring the temporary stowage bag?

02 22 19 39 CMP ... Here it is. Yes. (Laughter) ...

02 22 19 46 LMP What other crises ... by the board?

02 22 19 49 LMP I don't need any if you want to know. After what I've got in my pocket, I (laughter) can go anyplace for a while.

02 22 19 56 CMP Well, how could they ...?

02 22 20 08 LMP Well, that kind of makes ...

02 22 20 22 LMP How about just holding that ... tape ... The thing is, the damn thing has 16 moving parts.

02 22 20 39 LMP Well, I got it, but ... I'll bet - You can just put a piece of tape on it so it stays ...

02 22 20 59 CMP Okay, what's this coming up ...? ... coming up here.

02 22 21 03 CMP At 71 hours - exactly - it's 70:21 right now. The realignment has been completed already. It's an eat period for Bill, eat period for myself; prepare to do GDC align to the IMU. Okay, at 70:55 - -

02 22 21 23 CDR ...

02 22 21 25 CMP Okay, yes, let me ... At 70:55, you're going to pitch up your ORDEAL 180, 250, and 00.

02 22 21 37 CMP Okay. ... And we're going to have to share a window here, Bill at 71: - -

02 22 21 47 LMP ...

02 22 21 49 CMP Yes, because - I've got to get out the ...

02 22 22 01 LMP Orbital photos.

02 22 22 21 CMP Well, I was real worried about the evaporator.

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02 22 22 44 LMP Frank, that's the best I can do for you. If you can just hold it and - like that and take the picture.

02 22 22 52 LMP Okay, now look, can you - could you stick that ... stick it in the holder behind your head. I'll take that film out of your way - get a chance, stow it, that'll be the best thing to do.

02 22 23 36 LMP Okay.

02 22 23 46 LMP Jim, did you get that flight plan?

02 22 23 48 CMP Yes, I got it right down here ...

02 22 23 56 LMP Why don't we keep it right in here, I guess and -

02 22 23 59 CMP Well, listen, how about - now ... Okay, ...

02 22 24 04 LMP We could use Frank on the keypunch for the control point.

02 22 24 07 CMP Yes, either way, it makes no difference because you have that - -

02 22 24 10 CDR I've got a keypunch here. I ...

02 22 24 14 CMP Yes, I think, Frank, ... the attitude.

02 22 24 22 LMP Okay, Frank, you want to configure your 16-millimeter camera as follows: you've got 2/3 of a magazine in there.

02 22 25 05 LMP Okay, we're sticking - magazine J onto the 16-millimeter camera, and removing magazine H. We had magazine H running at one frame per second, and what was the f-stop - you remember? f:8 all the way through the pass; we didn't get around to changing the f-stop.

02 22 25 28 CDR Alright, through the pass.

02 22 25 32 LMP Okay, now it starts at f:2.8, 1/250th of a second. Sorry, but I got the wrong ...

02 22 25 44 CMP ...

02 22 25 45 LMP One - f:2.8, one frame per second.

02 22 25 49 CDR 2.8?

02 22 25 50 LMP Right.

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02 22 25 55 CDR Go ahead?

02 22 25 56 CMP Yes.

02 22 26 01 LMP Well, Frank, I'm going to have to give you - Would you remind me to give you new exposures every now and then as on this map? I'll have - I'll have the map right in front of me so I can ... without any trouble. The only thing is you have to remind me.

02 22 26 22 LMP Okay. Tell them I've got the earth in the sextant.

02 22 26 48 LMP Okay, Frank? Would you start the 16-millimeter camera when you're coming across the terminator with the pass. Okay?

02 22 26 57 LMP I'll take the spotmeter readings and be able to tell you what the ... when we're all set for TV, and then ...

02 22 27 12 LMP I'm ready for a map update.

02 22 27 18 CMP Man, this is really exciting.

02 22 27 26 LMP Roger, and we're standing by for a map update.

02 22 27 42 CMP Houston, Apollo 8. Just for your information, after we completed P52, I have acquired the earth in the sextant. Quite a sight from here.

02 22 27 56 CMP Okay, O<sub>2</sub> purge set.

02 22 28 09 CDR How are the system's experts on the SP8 coming, Jerry?

02 22 28 32 CDR Let's put that over there.

02 22 28 46 CDR Thank you.

02 22 29 08 CDR ... You've been living on emotions ...

02 22 29 11 CMP ...

02 22 29 21 CDR ... those last two REV's ...

02 22 30 49 CDR Roger; 5 minutes of HIGH bit - -

02 22 44 36 CDR Houston, Apollo 8. We're in the process of preparing meal 4, day - correction, day 4, meal A.

02 22 45 29 CDR ... get me the hot water ...

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